

CLAIMS

I claim:

1 1. A pharmaceutical composition for therapeutic or prophylactic use
2 comprising a silica containing solid having an average particle size of about 6 microns
3 or less.

1 2. The pharmaceutical composition according to claim 1 wherein the silica
2 containing solid is selected from the group consisting of zeolites, silicas, clays, double
3 hydroxides, and mixtures thereof.

1 3. The pharmaceutical composition according to claim 1 wherein the silica
2 containing solid is zeolite containing encapsulated metals or metal complexes.

1 4. The pharmaceutical composition according to claim 3 wherein the metal
2 complexes are metal - salen complexes, phthalocyanines, corrinoines or porphyrines.

1 5. The pharmaceutical composition according to claim 1 wherein the silica
2 containing solid is silica gel or other silicas containing encapsulated metals, metal
3 complexes, proteins, DNA or whole cells or tissue samples.

1 6. The pharmaceutical composition according to claim 1 wherein the silica
2 containing solid is mesoporous aluminosilicate containing encapsulated metal
3 complexes, proteins, DNA or small molecules having pharmaceutical activity.

1 7. The pharmaceutical composition according to claim 1 wherein the silica
2 containing solid is modified by surface adsorption of molecules to enhance the
3 bioavailability of the silica containing solid.

1 8. The pharmaceutical composition according to claim 7 where the silica
2 containing solid is modified by surface adsorption of molecules selected from the
3 group consisting of vitamin B12 and silanes.

1 9. The pharmaceutical composition according to claim 1 where the silica-
2 containing solid is dealuminated.

1 10. The pharmaceutical composition according to claim 1 where the pores of
2 the silica containing solid are modified by silanation, methylation, surfactant
3 adsorption or other chemical reaction to change the wettability, charge or size of the
4 pores.

1 11. A method to modify gene expression, cell proliferation, death, growth
2 rate or differentiation by administering to a mammal a silica containing solid as an
3 antioxidant or oxidant.

1 12. A method to enhance immunogeneity of protein antigens, other
2 biological macromolecules, whole cells or cell fragments by administering to a
3 mammal in need thereof a silica containing solid as a vaccine adjuvant in combination
4 with protein antigens, whole cells or cell fragments.

1 13. A method for providing sustained delivery of a pharmaceutically active
2 agent by using a silica containing solid as a reservoir for the pharmaceutically active
3 agent.

1 14. The method of claim 13 wherein the pharmaceutically active agent is
2 selected from the group consisting of metals, metal complexes, small molecules,
3 proteins, DNA, cell fragments and whole cells.